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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/723,543

11/26/2003

John R. Wootton

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04/22/2009

SONNENSCHN NATH & ROSENTHAL LLP

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CHICAGO, IL 60606-1080

EXAMINER

HANDAL, KAITI V

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

04/22/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                       |  |
|------------------------------|--------------------------------------|---------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/723,543 | <b>Applicant(s)</b><br>WOOTTON ET AL. |  |
|                              | <b>Examiner</b><br>KAITY V. HANDAL   | <b>Art Unit</b><br>1795               |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 18-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/26/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 18-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hokari et al. (US 2003/0168381) in view of Wright et al. (USP 5,141,823).

Regarding claims 18-35, Hokari et al. discloses a system comprising hydrocarbon and water feeds; a supercritical water (SCW) reactor; further including an oxygen feed into the SCW reactor; further comprising a sensor and control system for monitoring at least one of said syntheses gas and said output gas and adjusting said feeds based on said sensing (see for example [0005]-[0018] and [0031]).

While the reference teaches that the produced combustible gas can be used for energy generation, it does not disclose another means of using said combustible gas for energy generation, namely using it in a fuel cell. Since to use combustible gas resulting from hydrocarbon reforming in a fuel cell was well known in the art at the time of the invention, as evidenced by Wright et al. (see for example abstract), it would have been obvious to one having ordinary skill in the art at the time of the invention to use said generated combustible gas of Hokari et al. in the fuel cell of Wright et al., as doing so would have amounted to nothing more than to use a

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known material for its intended use in a known environment to accomplish an entirely expected result. Further examiner notes that an apparatus is not patentable where it is an obvious combination of two known elements, wherein each element lends to end products the desirable properties that each is known to produce when used alone and there exists no evidence of co-action between the elements that produces unexpected results. See *In re Fortess and Schoeneberg*, 152 USPQ 13 (CCPA 1966).

Wright additionally discloses that to use combustible gas in a fuel cell, the system needs to include a water-gas shift reactor (C5/L62-68 and C7/L50-65) and a capturing system to temporarily store that hydrogen gas before supplying it to the fuel cell (C 1/L54-C2/L5).

Hokari suggests pre-heating water (page 3, paragraph [0037]), which makes it obvious if not inherent that a preheater/(source of heat) to heat the water prior to entering the reactor is disclosed therein. Furthermore, Hokari does teach having a fuel pre-heater/(fuel is preheated in mixing unit (fig. 4, 1) which is in direct thermal communication with said fuel feed and configured to preheat fuel to a predetermined temperature equal to or greater than the critical temperature of water once the fuel feed gets in direct contact with the supercritical water), the preheated fuel, air and water continue to mix in mixing means/(reactor (5)), which is similar to the instantly claimed mixing means.

Regarding limitations recited in claims 18-35 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device ( as

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described by including claim limitations in process language versus structural limitations) nor material or article worked upon (diesel fuel) further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115. Further, process limitations do not have patentable weight in an apparatus claim. See Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

### ***Response to Arguments***

#### **Claim Rejections - 35 USC § 112**

3. The 35 USC 112, first paragraph rejection for claims 18-35 is withdrawn by Examiner due to applicant's convincing remarks.
4. The 35 USC 112, first paragraph rejection for claim 26 is withdrawn by Examiner due to applicant's convincing remarks that the means for creating a mixture of the preheated diesel fuel, the preheated water and air is the SCW reactor as supported in the specification.
5. The 35 USC 112, second paragraph rejection for claims 18-35 is withdrawn by Examiner due to applicant's convincing remarks that the claims contain the limitation that the SCW reactor outlet feeds synthesis gas into the WGS reactor.

#### **Drawings**

6. Objection made to the Drawings is withdrawn by the Examiner due to applicant's remarks that the means for mixing the claimed feeds is the SCW reactor itself.

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Prior Art

7. Applicant's arguments filed 12/30/2008 have been fully considered but they are not persuasive.

Applicant argues on page 5, line 9-21 – page 6, lines 1-2 the following:

“...However, the heat exchangers in *Wright* are effective to heat the fuel and water mixture to only 80% of the temperature required for a reaction. See, U.S. Pat. No. 5,141,823, Col. 7, 1. 29-34. This is clearly unlike the claimed invention which heats a fuel, water and air mixture to greater than or equal to the critical temperature of water.”

Examiner respectfully agrees. However, upon examining the instant claims in light of applicant's remarks regarding the rejections set forth in the previous Office Action pertaining to the mixing means being the reactor itself, one of ordinary skill in the art would agree that Hokari does teach having at least one preheater adapted to preheat the water to the critical temperature of water as set forth above; furthermore, Hokari teaches preheating the fuel in preheater/operating unit (1) wherein the fuel gets in direct contact with supercritical water prior to proceeding to the mixing means/(SCW reactor 5), and thereby, the fuel is preheated by a preheater/operating unit (1) configured to heat the fuel to a temperature equal or greater than the critical temperature of water as instantly claimed (page 1, paragraph [0008], page 2, paragraph [0014], page 3, paragraph [0036]).

**Conclusion**

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAITLYN V. HANDAL whose telephone number is (571)272-8520. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. V. H./  
Examiner, Art Unit 1795

4/7/2009

/Alexa D. Neckel/  
Supervisory Patent Examiner, Art Unit 1795



**Search Notes**

Application/Control No.

10/723,543

Examiner

KAITY V. HANDAL

Applicant(s)/Patent under  
Reexamination

WOOTTON ET AL.

Art Unit

1795

**SEARCHED**

| Class   | Subclass | Date     | Examiner |
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| Updated | Search   | 4/7/2009 | KH       |
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**SEARCH NOTES  
(INCLUDING SEARCH STRATEGY)**

|                                 | DATE     | EXMR |
|---------------------------------|----------|------|
| Updated key word search in EAST | 4/7/2009 | KH   |
| Updated inventorship search     | 4/7/2009 | KH   |
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